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FEASIBILITY STUDY

NC 24-27, Carthage Bypass  
Moore County  
R-2212

Prepared by  
Planning and Research Branch  
Division of Highways  
N. C. Department of Transportation

July, 1987

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I. DESCRIPTION

This report covers a preliminary study of a NC 24-27 bypass in the Carthage area. This project is included in the 1987-1995 Transportation Improvement Program for feasibility study and/or right of way protection. It is not currently funded.

II. PURPOSE OF PROJECT

Existing Route

NC 24-27 is classified as a minor arterial in the statewide highway network. It serves as a major east-west thoroughfare through Carthage.

Outside the corporate limits of Carthage, NC 24-27 is basically a two-lane, 22-foot facility. Where it coincides with US 15-501 east of Carthage, the existing pavement widens to 24 feet. Within the corporate limits of Carthage, the facility has a 44 foot curbed section with angular and parallel parking allowed on both sides. In the central business area of the town, NC 24-27 and several city streets come into a traffic circle formed around the Moore County Courthouse. Roadside development is primarily commercial east of the courthouse and residential west of the courthouse.

Current traffic volumes on the route range from a low of approximately 5000 vehicles per day west of SR 1261 to a high of approximately 7500 vpd at the traffic circle. Approximately 8 percent of the total traffic volume constitutes heavy trucks. Traffic flow is controlled by a single signal (NC 22), stop and yield signs at the traffic circle, and speed limits of 20 and 35 MPH inside the corporate limits and 45 and 55 MPH outside the corporate limits. Approximately 2000 vpd are considered to be through traffic.

Need for Project

Justification for a NC 24-27 rerouting around Carthage stems from a need to provide better traffic operation for through traffic and alleviate periodic traffic congestion around the courthouse traffic circle. According to local officials, the traffic circle becomes congested during the weekend period due to increased shopping and business trips to the central business area. It was also emphasized that tractor-trailer trucks have difficulty negotiating the courthouse circle and produce excessive noise in that area.

In addition to problems noted above, safety problems are apparent on NC 24-27 at its Y-type channelized intersection with US 15-501 just east of Carthage. Adding to the complexity of this intersection are nearby

connections of SR 1006 and SR 1804. A total of 21 accidents occurred in this area in the past four years.

### III. RECOMMENDATIONS AND COSTS

The recommended thoroughfare plan for Moore County dated March, 1987 includes a proposed NC 24-27 bypass north of Carthage extending from SR 1653 westward to SR 1640. Figure 2 shows the approximate alignment located generally about three-quarter mile north of existing NC 24-27 in central Carthage. The route is entirely on new location. (Note: An aerial mosaic showing the bypass corridor is on file in the office of Planning and Research Branch.)

Initial traffic volumes that would use the bypass are estimated to range from 2500 to 3000 vpd. These volumes would provide relief to the existing route from the through traffic, truck problems at the courthouse traffic circle, and safety problems at the US 15-501 intersection with NC 24-27. Traffic volumes in twenty years would be expected to reach 6500 to 7500 vpd.

The bypass route is approximately 4.3 miles between its terminals at SR 1653 and SR 1640. The route should include a one-half mile two-lane connector from the bypass to the center of town to improve access for local traffic. The connector would replace a poorly aligned portion of SR 1651 south of the bypass.

Construction cost for the bypass and the connector is estimated to be \$6,500,000. No bridge construction would be required and all intersecting roads would contact the bypass at grade level. Cost of acquiring an estimated 250-foot right of way with full control of access between at-grade intersections along the bypass and 100-foot right of way with no control of access along the connector is \$1,100,000 (3 residences taken.) Thus, the total cost of the improvements is \$7,600,000. The above cost estimates were made by the Planning and Research and Right of Way Branches.

### IV. ALTERNATIVES

No other corridor was found to be more feasible from the standpoint of traffic service, environmental impacts, and overall costs.

A possible but less desirable alternative is a new route passing closer to the heart of Carthage. The adopted 1975 Thoroughfare Plan for Carthage includes a crosstown route generally extending between the eastern and western corporate limits. This proposed 1.8-mile facility would provide improved crosstown and loop service as well as accommodate through traffic but at urban operating conditions. Figure 2 shows the thoroughfare plan route located generally about one-quarter mile north of the existing route. The route is almost entirely along new alignment.

Because of its proximity to developed areas, the alternative route would attract approximately 1000 vpd more than the outer bypass route. Even with additional traffic, a two-lane shoulder section should suffice for the planning period, but sufficient right of way should be acquired to accommodate an ultimate five-lane curbed section.

The total estimated cost of the alternative route is \$3,250,000 including \$2,350,000 for roadway construction and \$900,000 for right of way (3 residences and 2 businesses taken). The right of way cost estimate is based on a minimum 90 foot right of way width.

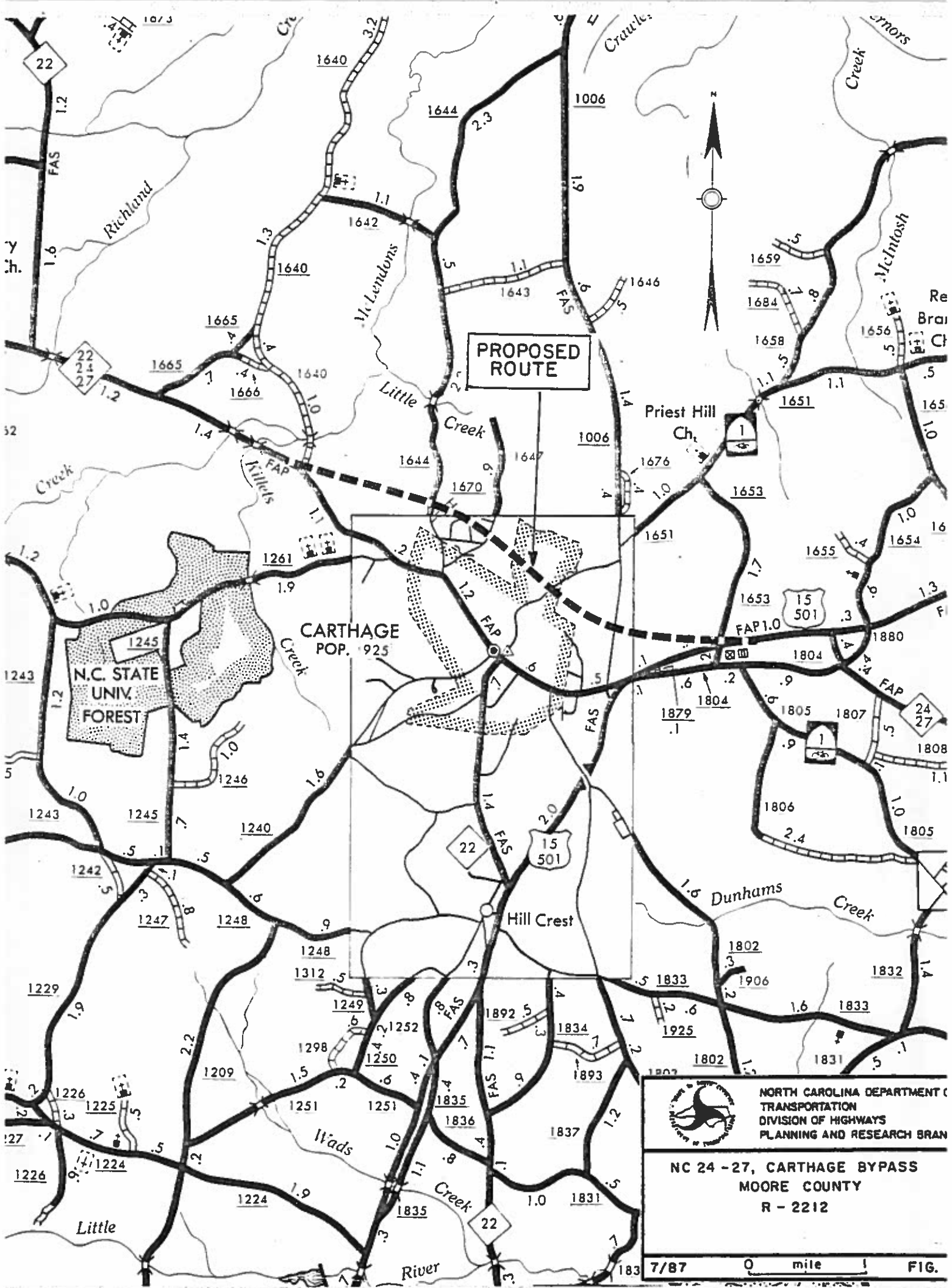
In conjunction with the alternative construction, it would be necessary to revamp the nearby multiple intersections of NC 24-27 and US 15-501, SR 1006, and SR 1804 to improve traffic operation and safety. The required improvements cannot be determined without a detailed investigation by the Traffic Engineering Branch. However, it is roughly estimated that improvement to the intersection complex would cost \$250,000 - \$500,000.


#### V. OTHER COMMENTS

No sensitive areas of environmental concern are anticipated to be crossed by the proposed bypass. Possible negative impacts include loss of forested land and wildlife habitat and displacement of some residences. Impacts along the alternative route would be greater because of the route's proximity to developed areas of Carthage.

If the project is to be implemented at a future date, all feasible alternatives and their associated impacts will have to be evaluated in a planning and environmental document prior to that time, and a final decision made as to the most appropriate improvement.

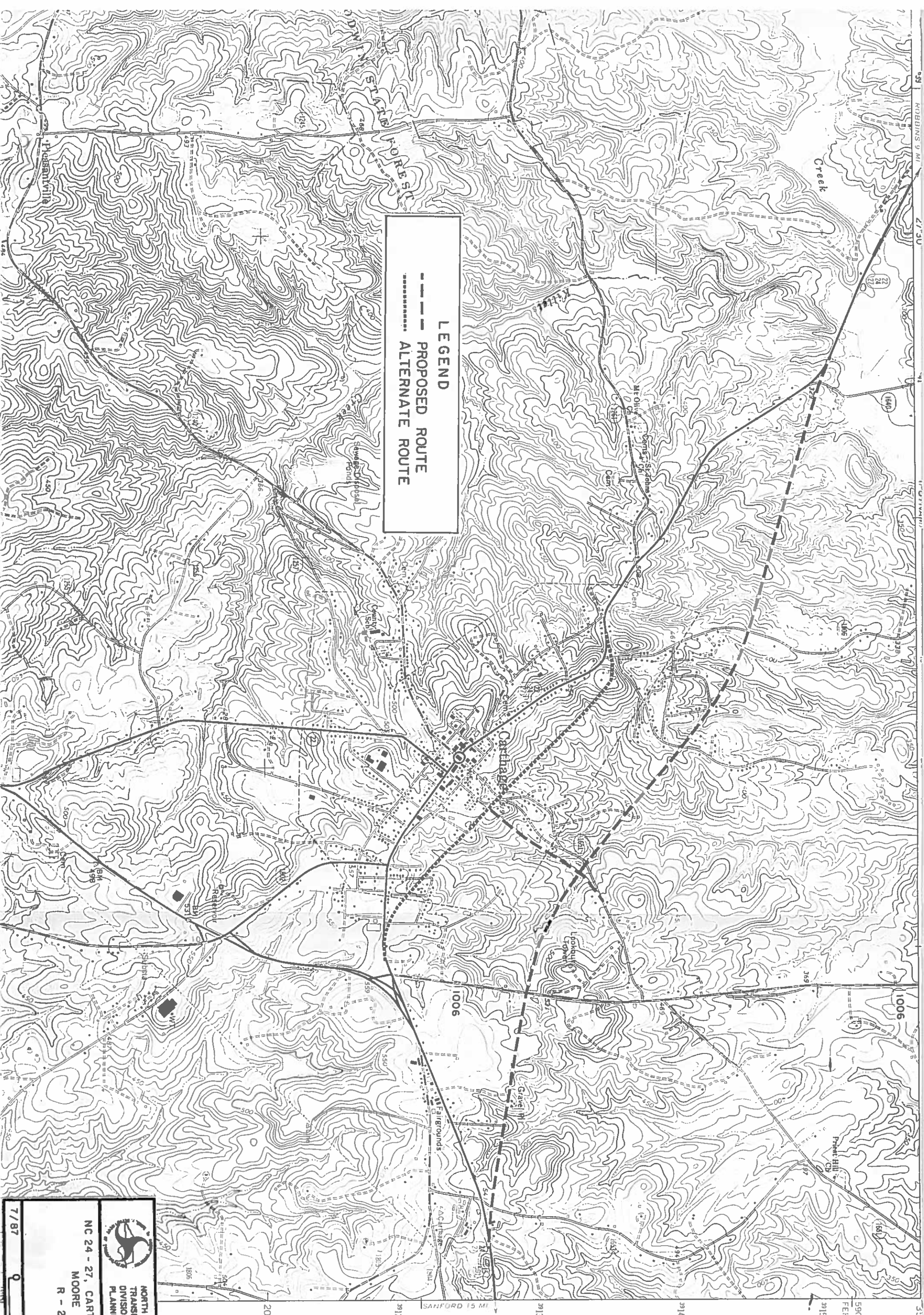
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LEGEND  
- - - - - PROPOSED ROUTE  
..... ALTERNATE ROUTE





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